

REMARKS

The applicants originally submitted claims 1-9 in this application. In previous responses to a previous Office Actions, the applicants amended claims 1, 2, 4, 5 and 7, canceled claim 9, and added a new claim 10. Accordingly, claims 1-8 and 10 remain pending in this application.

The Examiner rejected claims 1-3 and 8 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,180,411 (*Backer*) in view of U.S. Patent No. 6,496,627 (*Tuminaro*) or U.S. Patent No. 5,478,371 (*Lemaire*). The applicants respectfully traverse the rejection in view of the remarks set forth below.

In the rejection, the Examiner states that *Backer* does not teach exposing the drawn fiber to deuterium at room temperature, but that *Tuminaro* discloses that deuterium exposure results in improved long term signal attenuation performance and *Lemaire* teaches to treat fibers with deuterium at room temperature to make laser cavities, filters, multiplexers and demultiplexers.

With respect to *Tuminaro*, the applicants submit herewith evidence to show diligence by the inventors in developing the commercial embodiments of the invention that are disclosed and claimed in the patent application. More specifically, the applicants submit herewith evidence that clearly shows diligence on the part of the inventors from May 31, 2000, the date of conception, to at least March 19, 2001.

Also, the applicants submit herewith an affidavit by John M. Harman, a registered attorney of record who drafted the applicants' patent application. The affidavit states that a reasonable showing of diligence was made by the affiant from the time the inventors communicated the claimed invention to the affiant (around January 26, 2001) to the time the affiant drafted and filed the patent application (June 26, 2001).

In view of the evidence submitted herewith and the affidavits submitted herewith, along with the previously-submitted affidavit of Kai H. Chang, one of the co-inventors of the claimed invention, the applicants respectfully submit that diligence has been established from a time prior to the date of the reference (July

14, 2000) up until the filing date of the parent application, which date constitutes constructive reduction to practice.

In view of the foregoing remarks, the applicants respectfully submit that *Tuminaro* should be removed as a prior art. With *Tuminaro* removed as prior art, it is clear that the remaining cited art, *Backer*, does not disclose or suggest the applicants' invention as claimed.

With respect to the *Lemaire* reference, the applicants respectfully submit that there is no teaching or motivation to combine the teachings of the *Backer* reference and the *Lemaire* reference. Moreover, even if such combination was suggested (which it is not), the resulting combination still would not teach or suggest the applicants' claimed invention.

Lemaire discloses a method for increasing the index of refraction in selected portion of a glass body by exposing the selected portions to hydrogen or deuterium and simultaneously applying heat and actinic radiation (e.g., UV light) to the region. Such a technique is useful in fabricating Bragg gratings. On the other hand *Backer*, and the present invention, both involve methods for making conventional optical fiber whose refractive-index profile is substantially constant along the axial direction. As disclosed in *Lemaire*, Bragg gratings are lengths of optical waveguides, such as optical fibers, with periodic variations of refractive index in the axial direction. Nothing in either of the fiber-making methods of *Backer* or the applicants' claimed invention involves inducing periodic refractive index variations in the fiber. The Bragg gratings being made by *Lemaire* are different devices than the fibers being made in *Backer* and in the applicants' claimed invention. The typical, cost-effective, method for increasing the index of refraction of an optical fiber is to increase the amount of germanium present in the light-carrying (core) region of the fiber. There is no motivation to expose an optical fiber to hydrogen or deuterium while simultaneously applying heat and actinic radiation merely to increase its index of refraction.

Additionally, *Lemaire* teaches that hydrogen and deuterium are interchangeable, which teaches away from the present invention. Indeed, exposing the optical fibers of the present invention to hydrogen molecules

actually promotes "hydrogen aging loss," which is exactly what the present invention seeks to avoid. In the present invention, exposure to deuterium allows the formation of OD ions at atomic defect sites in the silica structure of glass so that when the fiber is subsequently exposed to atmospheric hydrogen, the hydrogen molecules will not be able to form OH ions at those sites and thereby cause optical transmission loss in the 1400 nm wavelength region of the fiber.

Accordingly, the applicants respectfully submit that there is no teaching or suggestion or motivation to combine *Lemaire* and *Backer*.

In view of the foregoing remarks, the applicants respectfully submit that the applicants' invention as set forth in claims 1-3 and 8 is neither disclosed nor suggested by the proper prior art and therefore the applicants respectfully request that the Examiner withdraw the rejection of claims 1-3 and 8 under 35 U.S.C. §103(a).

The Examiner rejected claims 1 and 7 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,262,365 (*Oyobe*) in view of *Tuminaro* (or *Lemaire*) and *Baumgart* (U.S. Patent No. 4,820,322). The applicants respectfully traverse the rejection in view of the remarks set forth below.

The Examiner states that *Oyobe* does not teach exposing the drawn fiber to deuterium at room temperature but that, as before, *Tuminaro* discloses that deuterium exposure results in improved long term signal attenuation performance. As discussed previously herein, *Tuminaro* should be removed as a prior art. Also, there is no suggestion of combining the deuterium exposure in *Lemaire* with the teachings of *Oyobe* (assuming such combination was even proper) for the same reasons discussed hereinabove with respect to *Backer*.

Accordingly, the applicants respectfully request that the Examiner withdraw the rejection of claims 1 and 7 under 35 U.S.C. §103 over *Oyobe* in view of *Tuminaro* (or *Lemaire*) and *Baumgart*.

The Examiner rejected claims 1-5, 7, 8 and 10 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of U.S. Patent No. 6,776,012. In response to the rejection, the applicants submit herewith a terminal disclaimer in compliance with 37 CFR 1.321(c). In

view of the submitted terminal disclaimer, the applicants respectfully request that the Examiner withdraw the rejection of claims 1-5, 7, 8 and 10 under the judicially created doctrine of obviousness-type double patenting.


The Examiner indicated that, except for the double patenting rejection, claims 2 and 10 are allowable. The applicants thank the Examiner for the indication of the allowable subject matter. However, both claims 2 and 10 depend from claim 1, which is allowable, as discussed hereinabove.

The applicants submit that all claims now are in patentable form, and respectfully urge that all the claims be allowed and the application be passed to issue. If the Examiner disagrees, the Examiner is invited to call the attorney for the applicants at the telephone number provided below.

Respectfully submitted,

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